Anchor-Ice

ON looking over some old papers I find a few notes on a rather curious instance of the mode of formation of anchor-ice which was accidentally brought to my notice.

When at Repulse Bay on the Arctic Circle many years ago, I went out one morning in the latter part of September to shoot deer, and on my way forded a stream of no great size, dry shod, having on Eskimo waterproof boots, the water being little more than a foot deep. The parts of this small river which had a slow current were already covered with ice, but not strong enough to bear my weight. For so early a date the day became extremely cold, and on my way home, after an absence of about eight hours, I was surprised to find, when recrossing the stream, that the water came high over my knees, filling my boots.

On examination I discovered that this rise of water was produced by an accumulation of *frozen water* fully eight or nine inches deep, adhering to the stones at the bottom of the rapid, all of which must have been formed, since the morning, at the rate of not less than one inch in the hour. The foot sank readily into this "slushy" formation, a lump of which rose buoyantly to the surface at each step.

Unfortunately I could not wait to study the process of construction as it was getting "dusk," and my wet clothes—which had to be cut off when I got to my fireless tent—began speedily to freeze.

I have seen "anchor-ice" in rivers many times, and believe that two or three conditions are requisite for its formation, namely:—

1. A rocky or stony bottom.
2. Shallow water as compared with that higher up the stream.
3. A swifter current and rougher water in comparison with a smooth and slower motion immediately above.

All these conditions existed in the present case.

The ford was a rapid, and as I have already mentioned, shallow, whilst immediately above there was a pool of nearly still water, three or four times as deep, which was ice covered to within a few yards of the ford. On the surface of this almost still water, close to the rapid, where it was yet unfrozen, numerous small crystals of ice were forming and floating, indicating that the water was at—perhaps colder than—the freezing point.

When these ice-crystals and surface cold water get into the turmoil of the rapid, they are brought into contact with the rocks and stones at the bottom, which are thus cooled down to the freezing point, and become convenient nuclei for ice-formation.[1]

Supposed anchor-ice is often found at the bottoms of shallow lakes and ponds, and also in the quieter pools of rivers; but this, as far as my experience goes, is not true anchor-ice, but is formed in the usual manner, beginning at the surface and increasing in thickness *downwards* until it reaches the bottom, to which it freezes firmly and remains attached during the spring and early part of summer—perhaps longer—with two, three, or more feet depth of water over it, as it slowly thaws.

The manner in which anchor-ice is formed may be well known; if so, the fact that no satisfactory description of the process has come under my notice is the only apology I have to offer for troubling you with this communication.

J. RAE

4, Addison Gardens, Kensington, W., March 25

Diatoms in the London Clay

I REGRET to find that there are some beautifully mounted slides in circulation in London that have been sold, and are labelled as diatoms from the London clay, which are not what they purport to be. To prevent further disappointment to microscopists, will you allow me to say that arrangements have been made for slides of the London clay diatoms to be procurable shortly at any of the usual places? Due notice will be given by advertisement in this paper, when and by whom slides can be supplied to the trade.

W. H. SHRUBSOLE

Sheerness-on-Sea

Carnivorous Wasps

IN NATURE, vol. xxi. p. 417, there is the statement that common wasps are carnivorous. I can prove this fact also by my own experience. I observed, one summer, in a country house, where wasps were shut in a room, that from lack of their usual food, and probably forced by hunger, they caught flies and devoured them. I saw several times wasps with a fly between their mandibles creeping on the window-glass, or eating them. Generally the wings and the head of the flies were mangled. I was one day so happy as to see a wasp catch a fly on the window, and observe how cleanly it picked the wings of the fly in order to hinder its flying away, and after having done so, how the wasp ate the head. I saw also some wasps quite prostrate and dying of hunger at last. I think that this fact could easily be verified by experiments.

LEWIS BOD

Hungary, Stuhlweissenburg, March 20

TWO ENTOMOLOGISTS

THE brief notices that appeared in the *Times* and in our last number of the death of two of the most prominent Continental entomologists, were scarcely sufficient, and we therefore give a slightly more extended account of the lives and labours of both.

Ernest August Helmuth von Kiesenwetter, born in 1820, was a member of the Saxon Privy Council, and was highly esteemed in his native country. Although only sixty years old at the time of his death, his first recorded published paper dates so long back as 1842. He was one of the most accomplished and conscientious German entomologists, and one of the hardest workers—a considerable traveller, so far as entomological journeys in different parts of Europe are concerned, a close observer, and a man above suspicion as to the nature of his work. Though chiefly a coleopterist, he attended more or less to all orders of insects, but limited his studies principally to the European fauna. The greater part of his memoirs appeared in the *Stettiner entomologische Zeitung* and the *Berliner entomologische Zeitschrift*, and the list is very long. But his principal work is undoubtedly concentrated in the part he took in the "Naturgeschichte der Insecten Deutschlands," commenced by Erichson, and completed so far as the greater portion of the Coleoptera are concerned. How far Kiesenwetter's decease may render even this portion incomplete, and prevent the realisation of the original scheme, we know not. It was a grand idea with an unfortunate title. Few works on systematic entomology have rendered so much service to workers occupied on those groups already attended to, and it will remain a monument to the industry of all concerned. Its title has brought upon it the reproach of being a natural history in which there is no natural history, a severe criticism which a little forethought on the part of the originator should have avoided. Kiesenwetter had to assist in carrying out a set programme. He did his part of it well and faithfully, and his other writings prove that the biological side of the question was always prominently before him.

In S. C. Snellen van Vollenhoven Holland has lost its Westwood. He was born in Rotterdam on October 18, 1816, and not even his intimate correspondents here knew of anything likely to cut short the career of so prominent a man. Attached for many years to the Natural History Museum at Leyden as Director, he retired from that position a year or two ago, and so much was he respected that a medal was struck in his honour upon that occasion. Van Vollenhoven was a naturalist in the fullest sense of the term. It has been said of him that his principal work was his "Faune entomologique des Indes Orientales," meaning thereby (principally) of the Dutch Indies. This work was sufficient to base a reputation upon, but it was, from a biological point of view, not the most important. He occupied himself especially with the insects of Holland, and it is for the works he produced upon them that his memory will be everlastingly respected by Dutchmen, and by all other entomologists who think there is yet much to be done in working out the fauna of Europe. Indeed we fancy the exotic work was forced upon him by the necessity of his position, rather than done *con amore*.

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[1] The way in which masses of ice, yards in extent, which have been floating on the surface in the smoother and slower current of a river, disappear when they enter a rapid and remain under water for some time, may be noticed in any country where the winters are cold enough, at the breaking up of rivers in the spring.

He published a fine volume on the "Hemiptera-Heteroptera of Holland," finally in a separate form, but originally in the pages of the *Tijdschrift voor Entomologie*, the *Transactions* of the Dutch Entomological Society, of which he was the leading spirit. Through the same medium he offered a series of biological memoirs on the Dutch Saw-flies, probably unparalleled for completeness. He continued Sepp's "Beschrijvingen en Afbeeldingen van Nederlandsche Vlinders," which remains without an equal. And in the latter decade of his life he produced a remarkable work (now incomplete) on the Ichneumonidæ of North-Western Europe, under the title of "Pinacographia." No man was more universally esteemed when living; no man will be more thoroughly missed amongst entomologists. For Holland his loss appears to be irreparable.

In concluding this notice it should be remarked that all Van Vollenhoven's own works (and those of some other Dutch entomologists) were illustrated by beautiful and faithful drawings from his own pencil.

A LEAF FROM THE HISTORY OF SWEDISH NATURAL SCIENCE[1]

II.

SCHEELE was born at Stralsund on the 9th December, 1742, the fifth in order of a numerous family. His father was a merchant of limited means who did not intend to give a *learned* education to his son Carl Wilhelm, who besides, like Linnæus and Berzelius, is said in his youth to have shown so little disposition for the common classical school studies that he was in danger of being considered the stupidest among his fellows. The Stralsund gymnasium accordingly was soon exchanged for the post of pupil to the apothecary Bauch at Gothenburg. Here Scheele was not kept very long at servile drudgery and mechanical hand labour; his attention to his duties and industrious reading of approved chemical authors soon gained him a place in the laboratory itself, where he not only distinguished himself by steady application and special skill in the accurate making-up of the preparations which belonged to the establishment, but also experimented in the silence of the night in order to satisfy his curiosity. He had now come to the right school bench, and with an experience led astray by no learned theories for his teacher, he laid the foundation of the chemical views and of that skill in chemical manipulation which were to gain for him so famous a name in the history of the natural sciences.

After the close of his six years' apprenticeship Scheele remained three years more at Gothenburg, after which he was employed in an apothecary's shop at Malmoe. From Malmoe he removed three years after, in 1768, to Stockholm. According to Wilcke's statement Scheele had by this time made several important discoveries, without however having succeeded in obtaining any direct acknowledgment of the accounts of the experiments relating to them which he had communicated to the Swedish Academy of Sciences. He was not, besides, satisfied with the employment he had obtained in the capital at the apothecary's shop, "Korpen," because he had nothing to do with the laboratory work proper. He therefore removed in 1770 to Upsala, attracted by the famous name of Bergman, to undertake the charge of the laboratory at one of the large apothecary's establishments there.

During his stay in Stockholm Scheele had given in to the Academy of Sciences several chemical papers which, after having been submitted to Bergman, were not printed, and it is even supposed that the learned professor of Upsala did not think it worth his while to read the productions of the young apothecary. At first, therefore, a certain coldness is said to have prevailed between these two men, of whom one was, and the other was soon to be, recognised as one of the greatest scientific geniuses of the century. An accident however soon brought them together, and the coolness gave place to a mutual friendship and admiration, of which the writings of both, and numerous letters from Scheele to Bergman, preserved in the Library at Upsala, bear witness. These pleasant relations exerted a great and fruitful influence on the scientific activity of both. The sharp-sighted experimenter and discoverer, Scheele, required the support of Bergman's regard and comprehensive learning in order to win recognition, and Bergman's organising genius was brought by Scheele's discoveries in contact with new fields of research before untouched by any man of science.

While residing at Upsala Scheele published (1770-75) some of his most important researches, for instance, on fluor spar, on black oxide of manganese, on arsenious acid, on the composition of the air, &c., and thus gained for himself almost at once a great reputation, not only in Sweden, but also in foreign countries. He was soon after chosen a member of the Swedish Academy of Sciences, in whose circle he took his place on an equal footing with the first men of the realm. From this time the young chemist was honoured by this scientific association in a way that always will form one of its fairest memories, and which under similar circumstances could scarcely have happened to him so early in any other country,—a circumstance which shows that no credit is to be given to the story which has been repeated in several of the sketches of his life, that Scheele was so little known to the leading scientific men of Sweden that a distinction intended for him by Gustavus III. was by mistake conferred upon another person of the same name. On the other hand it may have been true, and if so, it showed the little interest that Gustavus III. and his court entertained for Swedish natural research, that the King of Sweden on the 21st March, 1784, while present at a meeting of the Turin Academy of Sciences, for the first time heard the name mentioned of the only person with a truly world-historical name who then lived in Sweden. Little also does he appear to have suspected that in his own capital there was an Academy which, in respect of the influence it exerted on the progress of natural research, occupied a position quite equal to that of any other academy whatever.

From 1777 Scheele obtained from the Academy an annual grant of 100 rixdollars specie (about 40 guineas), to assist him in carrying on his chemical researches. He was present however at the meetings of the Academy only once, on the 29th October, 1777, when on his admission he read a paper "On a method of preparing *Mercurius dulcis* in the wet way." The day before he had undergone the apothecary's examination at the Medical College, and after taking the oath obtained an open commission empowering him, on the invitation of the magistrates, to be apothecary in the town of Köping.

For the longing for an independent sphere of activity had led Scheele in the autumn of 1775 to leave Upsala and remove to Köping, in order as dispenser to take charge of the apothecary's shop there, which belonged to a young childless widow of the former owner. From this time Scheele's life flowed calmly on in this town, uninterrupted by any remarkable occurrences, if we except a passing cloud caused by a buyer presenting himself with an offer to purchase the apothecary's shop of which Scheele had charge. This gave occasion to numerous proofs of friendship and regard for him. Gahn proposed that he should remove to his house; Bergman offered him a place at his table till some other suitable employment should turn up. Linnæus, Wargentin, Bäck, Schultzenheim, Alströmer, and the brothers Bergius offered him an apothecary's shop with a suitable laboratory and several advantages at Alingsos. Others wished to instal him as *Chemicus regius* in the capital and make him director of a new distillery. On D'Alembert's proposal

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[1] Translated from a paper by Prof. A. E. Nordenskjöld of Stockholm Continued from p. 521.